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EXAMINER	
STORM, DONALD L	
ART UNIT	**PAPER NUMBER**
2654	

DATE MAILED: 01/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/017,811	HARRIS ET AL.	
	Examiner	Art Unit	
	Donald L. Storm	2654	

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *December 31, 2001 through September 25, 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5-12 and 14-19* is/are rejected.

7)☒ Claim(s) *2-4 and 13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/14/03 & 9/25/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. A copy of the International Search Report (Forms PCT/ISA/210 and PCT/ISA/220) is present in the application file. The search report and its cited documents have been considered by the Examiner.

Specification

2. The title is objected to because it is not sufficiently descriptive of the invention. A new title is required that is clearly indicative of the invention to which the claims are directed. See MPEP § 606.01. The Examiner suggests that the Applicant consider a title including these elements: "Deleting Silent Frames for Audio Overhang Reduction for Wireless calls."

Claim Informalities

3. Claims 2-4 and 13 are objected to as being (directly or indirectly) dependent upon a rejected base claim. See MPEP § 608.01(n)V. The claim(s) would be allowable over the prior art of record if rewritten to include all of the limitations of the base claim and any intervening claims. The claims should also be rewritten to overcome any objections or rejections under 35 U.S.C. 112(2), especially as appearing in this Office action. Certain assumptions that make the limitations clear have been considered for the claims, as described next or elsewhere in this Office action.

4. The preamble of claim 1 is objected to under 37 CFR 1.75(a) because the invention established by the preamble is not carried out by the limitations in the body of the claim. The

preamble establishes a claim to a method of audio hangover reduction; however, the subject matter described by the limitations in the body of the claim is directed solely toward steps for preventing conversion to audio of voice frames having low voice activity. There are no steps that reduce hangover. Thus, the body of the claim is unconnected to a method that reduces audio overhang as set forth in preamble. This disconnect may leave an artisan uncertain (1) whether there is some unspecified inherency in the body of the claim that reduces audio overhang,, (2) whether the claim somehow further limits the size threshold, number of stored frames, etc. to an audio overhang period, (3) whether the scope of the invention is fully defined by the recited receiving, monitoring, and deleting steps, or (4) whether the claimed invention includes only deleting silent frames that somehow reduce audio overhang according to some unspecified method or function. It is confusing to establish a certain objective to be achieved by a method, but to define the method only by steps that do not accomplish that objective.

The further limitations of dependent claims 2-15 also do not carry out the functionality set forth in the preamble.

5. Claim 11 is objected to as failing to define the invention with the clarity required by 37 CFR 1.75(a). The claim describes the extracting step in terms of its characteristic, purpose, or capability. That is, extracting has the purpose for de-vocoding into audio. The Applicant may wish to consider if that limitation recites the claimed subject matter that the Applicant wants, because steps of a process should clearly recite method steps defined as steps, and not as characteristic, purpose, or description (that is, "such that" should be avoided). .

It may be unclear if de-vocoding is an operation or is intended to define function of which the method is capable, whether or not it is ever used for de-vocoding. It is not clearly set forth if

de-vocoding must be accomplished within the scope of the claim or whether any process suitable for de-vocoding is within the scope of the claim. The phrase "may prepare ... transfer, ... and execute" raises a question or doubt as to whether the feature introduced by such language is (a) merely a purpose or field of use of the portable terminal, and therefore not required, or (b) a required feature defining the claim.

The Applicant is advised that should the claim be amended to recite a step of de-vocoding, such a limitation may be objected to as being incomplete for omitting essential steps, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted steps are: vocoding. Nowhere is recited in the claim or in claims to which claim 11 depends that the next voice frame, after extraction, is capable of de-vocoding. Neither was vocoding the next voice frame recited in the claim.

To advance prosecution and apply prior art, the Examiner has considered the next voice frame as having an inherent property of "vocodedness" having resulted from some earlier, unspecified vocoding. As "the next voice frame" does not appear in the claims from which claim 11 depends, it has not been appropriate to assume such a similar inherent property for the frames recited in other claims. Furthermore, the specification's discussion of de-vocoding appears to derive from "voice encoded (or vocoded)". Consequently, the Examiner has considered the claim element as "voice de-encoding" since the specification does not explain de-vocoding in any other way.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Tanaka and Inoue

7. Claims 1, 5-8, 11, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. [US Patent 5,611,018] in view of Inoue [US Patent 6,138,090].

8. Regarding claim 1, Tanaka [at column 16, lines 43-47] describes an embodiment in which audio overhang may be reduced. Tanaka describes the content and functionality of the recited limitations recognizable as a whole to one versed in the art as the following terminology:

receiving voice frames that convey voice information having "silent frames" that indicate low voice activity or no voice activity [see Figs. 1 and 2, items 1, 2, 3, 5, 8, 10, 11, 12, 13, and their descriptions especially at column 14, line 49-column 16, line 37, of the voice sound input, framed in the frame memory, and outputted as sound, having sections that are judged which of the input signal correspond to a silence section on the basis of power compared to a threshold];

the frames stored in a frame buffer after being received [see Fig. 1, items 1, 5, 6, 7 and their description especially at column 15, lines 7-25, of the frame memory output stored in the ring buffer];

monitoring the number of frames stored there [see Fig. 1, items 1, 4, 7, 9, and their descriptions especially at column 15, lines 38-51, of the 15-bit digital signal taken as the number of words stored in the ring memory];

the number of frames in the buffer exceeds a size threshold [see Fig. 2, items 15, 16, 17, 18, and their descriptions especially at column 16, line 45-column 17, line 15, of the ring memory state immediately before overflow not less than detecting data Tmax set to a value smaller than the total number of words in the ring memory];

deleting when the number of frames in the buffer exceeds a threshold size [see Fig. 2, items 15, 16, 17, 18, 21, and their descriptions especially of Fourth Mode with reference to Second Mode at column 19, lines 5-55, of deleting the sound signal when the ring memory is in the state immediately before overflow];

it is at least a received silent frame that is deleted [see Figs. 1 and 2, items 1, 5, 7, 11, 21, and their descriptions especially of Fourth Mode with reference to Second Mode at column 19, lines 5-55, of deleting the input sound signal judged to correspond to the silence section];

this prevents conversion of the silent frame to audio [see Figs 1 and 2, items 7, 8, 10, 11, 12, 15, 21, and their descriptions of the Fourth Mode especially at column 25, line 64-column 26, line 22, of interrupting writing the silence section to the ring memory of stored signals to be output as sound].

Tanaka [at column 42, lines 22-23] suggests receiving the information signal from a digital communications line, but Tanaka does not discuss whether the method has application in wired or wireless systems. In particular, Tanaka does not explicitly describe that the voice information is for a wireless call.

Inoue [at column 14, line 66-column 15, line 6] recognizes the method of Tanaka provides a suitable preprocessor for voice encoding, and Inoue further describes an application in which:

voice information is for a wireless call [at column 17, lines 36-48, as the received information is transmitted on radio waves, such as applicable to cellular phone communication systems].

As indicated, Inoue shows that the method of Tanaka was known to artisans at the time of invention to be suitable for muting silent frames. Since Inoue also points out that muting has applicability for cellular communications, it would have been obvious to one of ordinary skill in the art of muting low level audio at the time of invention to include the concepts described by Inoue at least of processing voice information for a wireless call as an application of Tanaka's method for information received from a communications channel because it could prevent the conversion of received silent frames of a wireless call to audio output.

9. Regarding claim 5, Tanaka describes the limitations as for claim 1 and also describes:

deleting when an audio overhang reduction feature is enabled [at column 36, lines 34-41, as starting deletion of a silence section on the basis of providing a pause continuation length adjusting means that calculates a larger pause continuation length for a smaller deleted portion of silence]; and

and when the number of frames in the buffer exceeds a threshold size [see Fig. 2, items 15, 16, 17, 18, 21, and their descriptions especially of Fourth Mode with reference to Second Mode at column 16, lines 45-57, of deleting the sound signal when the ring memory is in the state immediately before overflow as determined by overflow detection data Tmax smaller than the total composing the memory].

10. Regarding claim 6, Tanaka also describes:

the size threshold is the number that would comprise approximately 500 msec [at column 36, lines 2-28, as the storage time Tm of 0.5 sec].

11. Regarding claim 7, Tanaka also describes:

silent frames marked by a station from which they originated to indicate that the silent frames convey low voice activity or no voice activity [see Fig. 2, items 21, 22, 25, 26, and their descriptions especially at column 26, lines 28-47, of the silence section with the first flag F1 set indicating power lower than the threshold];

and Inoue describes:

the marking is by a mobile station [at column 17, lines 36-48, as the embodiment is applicable to cellular phones].

12. Regarding claim 8, Inoue also describes:

the steps of the method a performed by a mobile station (MS) in the wireless call [at column 17, lines 36-48, as the embodiment is applicable to cellular phones transmitting the received information on radio waves].

13. Regarding claim 11, if the Examiner's assumptions are correct as explained elsewhere in this Office action, Tanaka also describes:

regularly extracting a next voice signal from the frame buffer into an audio signal [at column 15, lines 27-42, as reading out the signal written into the memory on the basis of read clocks for down-counting, D/A conversion, and outputting as a sound signal];

the extracting is for de-vocoding [at column 45, lines 43-47, as controlling the reading speed from the memory to subject the sound data to compression in the succeeding stage of the ring memory].

In the alternative, Inoue describes:

voice de-encoding [at column 17, lines 56-60, as decoding sound-signal codes].

14. Claim 16 sets forth limitations similar to limitations set forth in claim 1 and with additional limitations similar to claim 8. Tanaka and Inoue describe and make obvious the limitations as indicated there. Tanaka also describes further additional limitations as follows:

the receiver adapted to the receiving [see Figs. 1 and 2, items 1, 2, 3, 4, 5, 6, 7, and their descriptions especially at column 15, lines 7-27, of the voice speed converter receiving the voice sound input, framed in the frame memory, for writing into ring memory];

a processor adapted to the monitoring [see Figs. 1 and 2, items 5, 6, 7, 9, and their descriptions especially at column 15, lines 7-52, of the up-down counter subtracting the number or read clocks from number of write clocks to output a value taken as the amount of stored data in the ring memory].

15. Claim 17 sets forth additional limitations similar to limitations set forth in claim 11. Tanaka and Inoue describe and make obvious the additional limitations as indicated there. Tanaka also describes further additional limitations as follows:

the processor further adapted to the extracting [see Figs. 1 and 2, items 5, 7, 8, 9, 10, and their descriptions especially at column 15, lines 7-30, of the up-down counter read clocks reading out the signal written into the ring buffer].

Tanaka and Inoue and Kotzin

16. Claims 12, 14, 15, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. [US Patent 5,611,018] in view of Inoue [US Patent 6,138,090] and Kotzin [US Patent 5,555,447], already of record.

17. Regarding claim 12, Tanaka and Inoue describe and make obvious the included claim elements as indicated elsewhere in this Office action. As indicated before, Inoue describes the cellular application of Tanaka's system; however, Inoue does not describe any cellular communications details. In particular, nether neither Inoue nor Tanaka explicitly describes a dispatch call.

Like Tanaka, Kotzin [at column 4, lines 58] describes buffering voice, deleting silent frames for compression, possibly with pitch correction. Like Inoue, Kotzin describes the use of those techniques for information conveyed for a wireless call, and describes:

a wireless call that is a dispatch call [at column 1, lines 16-20, as a call made in a wireless dispatch system].

Kotzin [at column 6] points out that many effective time-scale compression techniques are known for controlling the rate of speech. As indicated, Kotzin shows that wireless dispatch calls were known to artisans at the time of invention to use time-scale compression, possibly with pitch correction and silence deletion, for compensating the delay introduced by channel-connect time.

Since Kotzin [at column 6, lines 28-32] also points out that introducing the time scaled speech has the advantage of avoiding dropped speech and accounting for the initial delay incurred during channel set-up, it would have been obvious to one of ordinary skill in the art of dispatch radio systems at the time of invention to include the concepts described by Kotzin at least of a wireless dispatch call as an application of Tanaka's method for information received from a communications channel because it has the advantage of avoiding dropped speech and accounting for the initial delay incurred during the dispatch call set-up.

18. Regarding claim 14, Tanaka and Inoue describe and make obvious the included claim elements as indicated elsewhere in this Office action. As indicated before, Inoue describes the cellular application of Tanaka's system; however, Inoue does not describe any cellular communications details. In particular, nether neither Inoue nor Tanaka explicitly describes performing the method by fixed network equipment.

Like Tanaka, Kotzin [at column 4, lines 58] describes a method of buffering voice, deleting silent frames for compression, possibly with pitch correction. Like Inoue, Kotzin describes the use of those techniques for information conveyed for a wireless call, and describes:

the method performed by fixed network equipment (FNE) facilitating the wireless call [see Fig, 1, items 100, 103, 110, 113, 115, and their descriptions at column 2, lines 3-39 and at column 8, lines 3-4, of implementing the unit in the repeater station coupled to the controller unit as the primary unit of a trunked dispatch radio system].

Kotzin [at column 6] points out that many effective time-scale compression techniques are known for controlling the rate of speech. As indicated, Kotzin shows that wireless calls were known to artisans at the time of invention to use time-scale compression, possibly with pitch

correction and silence deletion, for compensating the delay introduced by channel-connect time in radio dispatch systems. Since Kotzin [at column 6, lines 28-32] also points out that introducing the time scaled speech has the advantage of avoiding dropped speech and accounting for the initial delay incurred during channel set-up, it would have been obvious to one of ordinary skill in the art of cellular systems at the time of invention to include the concepts described by Kotzin at least of implementing time-scale compression, possibly with pitch correction and silence deletion, in the fixed network equipment of a wireless dispatch call as an application of Tanaka's method for information received from a communications channel because it has the advantage of avoiding dropped speech and accounting for the initial delay incurred during the dispatch call set-up.

19. Regarding claim 15, Tanaka also describes:

extracting frames from the frame buffer [at column 15, lines 7-42, as reading out the signal written into the ring memory from the frame memory output]; and

Kotzin also describes:

transmission to at least one mobile station in the wireless call [see Fig, 1, items 100, 103, 110, 113, 115, and their descriptions at column 3, lines 1-7 of all secondary units enable their receivers to listen to the speech transmitted by secondary unit 113].

20. Claim 18 sets forth limitations similar to limitations set forth in claim 1 and with additional limitations similar to claim 14. Tanaka, Inoue, and Kotzin describe and make obvious the limitations as indicated there. Tanaka also describes further additional limitations as follows:

the receiver adapted to the receiving [see Figs. 1 and 2, items 1, 2, 3, 4, 5, 6, 7, and their descriptions especially at column 15, lines 7-27, of the voice speed converter receiving the voice sound input, framed in the frame memory, for writing into ring memory];

a processor adapted to the monitoring [see Figs. 1 and 2, items 5, 6, 7, 9, and their descriptions especially at column 15, lines 7-52, of the up-down counter subtracting the number or read clocks from number of write clocks to output a value taken as the amount of stored data in the ring memory].

21. Claim 19 sets forth additional limitations similar to limitations set forth in claim 15. Tanaka and Inoue describe and make obvious the additional limitations as indicated there. Tanaka also describes further additional limitations as follows:

the processor further adapted to the extracting and to instructing [see Figs. 1 and 2, items 5, 7, 8, 9, 10, and their descriptions especially at column 15, lines 7-30, of the up-down counter read clocks reading out the signal written into the ring buffer and sending its output to the updown counter], and

Kotzin also describes:

a transmitter [at column 2, lines 49-51, as transmitter(s)];

a processor adapted to instruct the transmitter [see Fig. 1, items 100, 103, 104, 110, 115, and their descriptions especially at column 2, lines 38-57, of the controller and primary unit communicating to the secondary unites via a radio frequency signal of the transmitter/receiver(s)].

Tanaka and Inoue and Kanerva

22. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. [US Patent 5,611,018] in view of Inoue [US Patent 6,138,090] and Kanerva et al. [US Patent 5,793,744].

23. Regarding claim 9, Tanaka and Inoue describe and make obvious the included claim elements as indicated elsewhere in this Office action. As indicated before, Inoue describes the cellular application of Tanaka's system; however, Inoue does not describe any cellular communications details. In particular, nether neither Inoue nor Tanaka explicitly describes Radio Link Protocol.

Kanerva [at columns 1-2] broadly describes generally applied cellular communication functions; including the claimed:

receiving via RLP [at column 2 lines 19-21, as data received is RLP].

As indicated, Kanerva shows that receiving frames via RLP was known to artisans at the time of invention. Since Kanerva [at column 2, lines 16-24] also points out that RLP has the advantage of correcting frames that were received incorrectly from the communications channel between the MA and the MSC (IWF), it would have been obvious to one of ordinary skill in the art of cellular systems at the time of invention to include the concepts described by Kanerva at least receiving voice frames via RLP with Inoue's cellular application of Tanaka's method for information received from a communications channel because it has the advantage of correcting frames received incorrectly which will avoid dropped speech.

24. Regarding claim 10, Tanaka and Inoue describe and make obvious the included claim elements as indicated elsewhere in this Office action. As indicated before, Inoue describes the cellular application of Tanaka's system; however, Inoue does not describe any cellular communications details. In particular, nether neither Inoue nor Tanaka explicitly describes Forward Error Correction.

Kanerva [at columns 1-2] broadly describes generally applied cellular communication functions; including the claimed:

receiving via a Forward Error Correction [at column 2 lines 15-20, as data received is corrected employing Forward Error Correction (FEC)].

As indicated, Kanerva shows that receiving frames via correction by FEC was known to artisans at the time of invention. Since Kanerva [at column 2, lines 14-17] also points out that FEC has the advantage of correcting frames that were received incorrectly from the communications channel between the MA and the MSC (IWF), it would have been obvious to one of ordinary skill in the art of cellular systems at the time of invention to include the concepts described by Kanerva at least receiving voice frames via FEC with Inoue's cellular application of Tanaka's method for information received from a communications channel because it has the advantage of correcting frames received incorrectly which will avoid dropped speech.

Conclusion

25. The following references here made of record are considered pertinent to applicant's disclosure:

McDonald et al. [US Patent 6,122,271] identifying silence frames in voice telephony or CATV and inserting control signals into silent periods of the information signal.

Supplee et al. [US Patent 6,381,568] discontinues transmission of frames of digitized speech after a user-definable number of frames are detected that do not contain speech.

Terauchi [US Patent 6,389,391] describes mobile communications of mixed signals of background noise and voice with noise replaced by zero data or comfort noise frames.

26. Any response to this action should be mailed to:

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P.O. Box 1450
Alexandria, VA 22313-1450

or faxed to:

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Patent Correspondence delivered by hand or delivery services, other than the USPS, should be addressed as follows and brought to U.S. Patent and Trademark Office, 220 20th Street S., Customer Window, **Mail Stop Amendment**, Crystal Plaza Two, Lobby, Room 1B03, Arlington, VA, 22202

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald L. Storm, of Art Unit 2654, whose telephone number is (703) 305-3941. The examiner can normally be reached on weekdays between 8:00 AM and 4:30 PM Eastern Time. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (703) 305-9645.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Inquiries regarding the status of submissions relating to an application or questions on the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028 between the hours of 6 a.m. and midnight Monday through Friday EST, or by e-mail at: ebc@uspto.gov. For general information about the PAIR system, see http://pair-direct.uspto.gov.

Donald L. Storm

Donald L. Storm
Patent Examiner
Art Unit 2654

December 30, 2004